1077-05-2425 **Katherine V. Johnson*** (s-kfield1@math.unl.edu), 203 Avery Hall, Lincoln, NE 68588. *Weak Discrepancy of Grids.* Preliminary report.

A linear extension of a poset might be considered “good” if incomparable elements appear near to one another. The linear discrepancy of a poset is a natural way of measuring just how good the best linear extension of that poset can be, i.e.

$$\text{lin-disc}(P) = \min_{L} \max_{x||y} |L(x) - L(y)|,$$

where L ranges over all linear extensions of P mapping P to $\mathbb{N}$. In certain situations, it makes sense to weaken the definition of a linear extension by allowing elements of the poset to be sent to the same integer, while still requiring that $x < y$ implies $L(x) < L(y)$. This is known as a weak labeling. Similar to linear discrepancy, the weak discrepancy measures how nicely we can weakly label the elements of the poset. I will calculate the weak discrepancy of grids, including the surprising result that our freedom really only lies in the two smallest dimensions. (Received September 23, 2011)